USER MANUAL

Advantage 900
Remote Operator Pendant

Handheld Machine Control Device

3AO-ROPEND-363

April 10, 2008

DELTA TAU
Data Systems, Inc.
NEW IDEAS IN MOTION ...

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REVISION HISTORY				
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INTRODUCTION

Overview

The Advantage 900 Remote Operator Pendant is a compact and highly functional handheld machine control device. The unit is supplied with the Advantage 900 Basic Package or can be purchased separately for custom machine control applications. The unit interfaces to PMAC and/or UMAC controls via a special driver embedded in the Pcommserver Software device driver. The Advantage 900 Remote Operator Pendant is optionally available in a wireless Bluetooth version.

The Advantage 900 Remote Operator Pendant includes a secondary relay interface board. This board provides a convenient way to interface a latching power-on circuit for machines, includes provisions for interfacing Emergency Stop circuitry, and also serves to accommodate the transceiver hardware when the optional Bluetooth hardware is present.

The Advantage 900 Relay Board requires a 24VDC always-on circuit if the latching power-on features are to be utilized. This 24VDC power-supply is intended to be always on unless the machine is disconnected from the main power disconnect. The current requirements of the 24VDC power supply depend on the user's circuit design. Utilizing the always-on circuitry of the relay board is optional and does not affect the functionality of the remote handheld pendant.
The Advantage 900 Remote Operator Pendant includes the following control features:

- Emergency Stop Twist and Release Button (stop only for wireless version)
- Dedicated Function buttons including:
    - Auto Mode Select*
    - MDI Mode Select*
    - Reset*
    - Single Block Mode*
    - Block Delete Mode*
    - Optional Stop Mode*
    - Continuous Jog Mode Select*
    - Handwheel/Incremental Jog Mode Select*
    - Home Mode Select*
- Six User Definable and Legendable Buttons*
- ATC Forward or Reverse Function Buttons (can be used for alternate functions)
- Spindle Forward/Reverse Buttons (can be used for alternate functions)
- Analog Overrides for Feedrate, Rapid, and Spindle Speed
- Axis Select Rotary Switch (X/Y/Z/A/B/C)
- Jog Speed Select Rotary Switch (Lo/Med Lo/Med/Med Hi/Hi)
- Separate Feed Hold and Cycle Start Buttons

- Jog Plus and Minus Buttons
- Machine Tool Style Detented Manual Pulse Generator

* - Includes Illuminated Indicator LED

Part Numbering

The Advantage 900 Remote Operator Pendant is available with only one option, wireless Bluetooth functionality. When the unit is purchased individually, the part numbers are as follows:

Standard Unit – A900-00000-S0
Wireless Unit – A900-00000-W0

When purchased as part of an Advantage 900 system, the zeros in the above part numbers will be replaced by characters indicating system options.

Example: Advantage 900 Basic Package – A909-1VAP0-S1

The Wireless version (Option 1) provides wireless operation via Bluetooth Class 1(100m, 2.4 ~ 2.4835GHz Freq.). Please note when the wireless option is ordered, the yellow Emergency Stop label at the top of the unit is replaced with a red Stop label per safety regulations (IEC 204-1, Section 9.2.7.3).

Compatibility

The Advantage 900 Remote Operator Pendant is compatible with any Delta Tau system using the Pcommserver Pro2 device driver and a Turbo CPU based PMAC or UMAC which includes the Dual Ported Ram option. In most cases the Advantage 900 Remote Operator Pendant will be used with the PMAC-NC Pro2 Software. The PMAC-NC Pro2 software is compatible with Windows XP based operating systems only. When used with the PMAC-NC Pro2 environment, the Advantage 900 Remote Operator Pendant software setup is automatic.

Note:

Only Turbo CPUs with Dual Ported Ram are supported.

Alternatively the Advantage 900 Remote Operator Pendant can be used in custom software applications which utilize the Pcommserver Pro2 as the communications device driver. When using the Advantage 900 Remote Operator Pendant in custom applications with the Pcommserver device driver, data transfer is automatically performed. The user must build all software logic related to the Remote Pendants I/O per the I/O map discussed in the Custom Software Setup section of this manual.

A host PC is required with a free USB2.0 port or RS232 serial port when using the optional wireless version.

Note

Use only primary back panel USB2.0 ports when connecting any Advantage 900 Remote Pendant or UMAC controller. Do not use auxiliary USB2.0 ports.

Communication Interface

The Advantage 900 Remote Operator Pendant communicates to the PMAC/UMAC through the Pcommserver device driver. The Pcommserver device driver is initialized when any Delta Tau Pro2 based software is started. During the initialization sequence the device driver will automatically detect when the Advantage 900 Remote Operator Pendant is present and begin transferring data to the PMAC/UMAC via Dual Ported Ram memory addresses (see the Software Setup section of this manual for more information).

The Advantage 900 Remote Operator Pendant connects directly to a PC via either a USB2.0 port or RS232 Serial Port (when using the wireless option). The Pcommserver transfers the information to the PMAC via the device driver. The Advantage 900 Remote Operator Pendant does not connect directly to the PMAC.

When the optional wireless version is used, the connection to the PC is via the RS232 port located on the Advantage 900 Relay Board, *not* directly from the handheld unit.

Specifications

Advantage 900 Remote Operator Pendant		
Model	USB2.0 Cabled Pendant (P/N: A90x-xxxxx-Sx)	Wireless Bluetooth Pendant (P/N: A90x-xxxxx-Wx)
Power Requirements	+5VDC, 500mA (Through USB2.0 Cable)	+5VDC, 1.5A (Through Charge Cable)
Battery	N/A	Lithium Ion, +3.7VDC
Advantage 900 Relay Board		
Power Requirements	+5VDC, +12VDC (Through Small Disk Drive Connector)	+5VDC, +12VDC (Through Small Disk Drive Connector)

HARDWARE SETUP

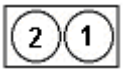
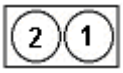
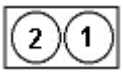
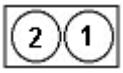
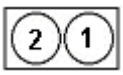
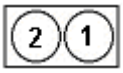
The Advantage 900 Remote Operator Pendant and Relay Board communication jumper settings are configured at the factory depending on the communication format (USB2.0 or Bluetooth).

The Remote Operator Pendant jumpers should be left in their factory-supplied state and should not require modification. They are described here for reference and troubleshooting purposes only.

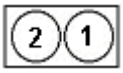
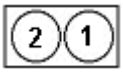
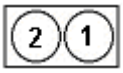
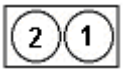
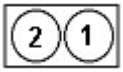
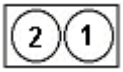
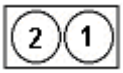
The behavior of the Emergency Stop circuitry on the Relay Board may be modified depending on the settings of Relay Board jumpers E3, E4, E5, and E6. Refer to the example wiring diagrams in Appendix B for more information.

Jumper Configuration

Advantage 900 Remote Pendant – (P/N: 300-603812-10x)

E POINT & PHYSICAL LAYOUT	DESCRIPTION	Cabled USB2.0	Wireless BlueTooth
E1 	Factory Programming.	ON	ON
E2 	Supplies +5VDC power through USB cable when present.	ON	OFF
E3 	Supplies +5VDC power through factory programming cable.	OFF	OFF
E4 	Voltage monitor disable jumper. When removed a battery voltage drop below +3VDC will cause the pendant to shut down. Must be present for cabled version.	ON	OFF
E5 	Factory troubleshooting jumper. Bluetooth signal detection.	ON	ON
E6 	Factory troubleshooting jumper. +5VDC bypass.	OFF	OFF

Advantage 900 Relay Board – (P/N: 300-603826-10x)

E POINT & PHYSICAL LAYOUT	DESCRIPTION	Cabled USB2.0	Wireless 1 Bluetooth	Wireless 2 Bluetooth
E1A1 	Enables RS-232 Receiver Outputs.	OFF	2-3	2-3
E1B1 	Runs RS-232 Transceiver in normal mode.	OFF	2-3	2-3
E1C1 	Not Installed.	N/A	N/A	N/A
E3 	Emergency Stop Status loop enable. Must be present for cabled version. Can be used to disable Bluetooth watchdog relay K5B.	ON	ON	OFF
E4 	Emergency Stop Loop configuration jumper. Can be configured for various functions when Bluetooth option is present (see schematics).	ON	OFF	ON
E5 	Emergency Stop Loop configuration jumper. Can be configured for various functions when Bluetooth option is present (see schematics).	ON	OFF	ON
E6 	Emergency Stop Loop configuration jumper. Can be configured for various functions when Bluetooth option is present (see schematics).	OFF	ON	OFF

Connections

Advantage 900 Remote Operator Pendant

The Advantage 900 Remote Operator Pendant requires very few connections. The USB2.0 cabled version simply needs to be plugged into a PC's back panel USB2.0 port and earth grounded for safety (a grounding wire is included with the cable assembly). An Emergency Stop Loop is included to interface with the machines safety circuitry. This loop passes through a normally closed set of contacts in the Emergency Stop switch housed in the handheld unit. The Advantage 900 Relay board provides a convenient method to interface this circuitry.

The wireless version includes a charging cable which connects directly to a standard PC disk drive connector. The Emergency Stop circuitry is not present on the wireless unit and is replaced by a Stop circuit which is electronically sensed and distributed at the Advantage 900 Relay Board.

No other connections are required for the handheld portion of the device.

Advantage 900 Relay Board

The Advantage 900 Relay Board provides a convenient way to interface a latching power-on circuit for machines, includes various hooks for interfacing Emergency Stop circuitry, and also serves to accommodate the transceiver hardware when the optional Bluetooth hardware is present.

The Advantage 900 Relay Board requires a 24VDC always-on circuit if the latching power-on features are to be utilized. This 24VDC power-supply is intended to be always on unless the machine is disconnected from the main power disconnect. The current requirements of the 24VDC power supply depend on the user's circuit design.

The following is a description of the connections when using the Advantage 900 Relay Board. See the Connector Description section for complete details of these connectors.

J4 – PC Power Connector
J4 connects to a standard PC floppy drive power connector. The +12VDC controls the state of the PC-Power relay for both versions. The +5VDC is used by the Bluetooth circuitry in the wireless version.

J5 – Wireless Antennae Connector (Wireless Version Only)
J5 connects to the antennae for the wireless Bluetooth version only.

J7 – RS-232 Port (Wireless Version Only)
J7 connects to an RS-232 port on the PC. This is only required for wireless Bluetooth versions only.

J8 – Machine Power On Button
J8 connects to a momentary switch which controls the latching power-on circuitry built into the Advantage 900 Relay board. This is connected to the green power button on the front of the Advantage 900 console units when complete systems are purchased.

J9 – Estop Switch
J9 usually connects to the Emergency Stop switch located on the front of Advantage 900 console units. Pins 1-2 are part of the Estop Loop and must be connected to complete the circuit between pins 5-6 on terminal block J13. Pins 3-4 are part of the Estop Status Loop and must be connected to complete the circuit between pins 7-8 on terminal block J13.

See the wiring diagrams in Appendix B for example of how these circuits can be used.

J13 – Machine Interface Terminal Block 1
Pins 1-2: Latching Power-On circuit actuated via a momentary contact switch attached to connector J8 (the Green button on Advantage 900 Console units). Once this circuit is energized it latches the relay contacts through pins 3-4 of the same connector.

Pins 3-4: Power-On relay contacts. Use this circuit to enable or turn on anything you wish after the power-on latch is activated. Usually this is used to turn on a larger magnetic contactor inside the main electrical cabinet. Through this circuit you can control the entire machine power on/off

circuitry.

Pins 5-6: Estop Circuit. Refer to the wiring diagrams in Appendix B for various ways to configure this Emergency Stop circuit.

Pins 7-8: Estop Status Circuit. Refer to the wiring diagrams in Appendix B for various ways to configure this Emergency Stop circuit.

Pins 9-10: Power-Off input. Applying 24VDC across this circuit will open the latched power-on circuit. Use an external signal such as a PMAC or other output to power down the entire system.

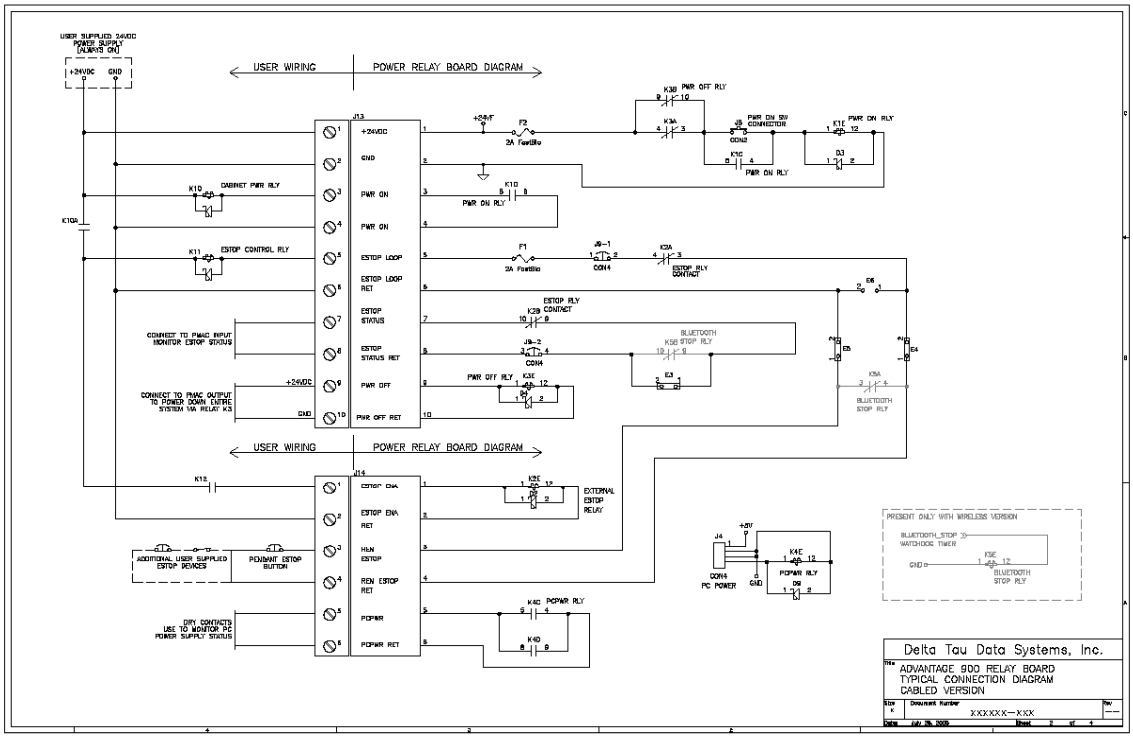
J14 – Machine Interface Terminal Block 2
Pins 1-2: Remote Estop Enable. Applying 24VDC across this circuit from an external output or safety PLC will actuate an Estop condition in both Estop circuits on J13 (Pins 5-6 and 7-8).

Pins 3-4: A convenient place to wire additional Estop devices. If your system includes a cabled remote pendant it will be connected here. This circuit can also be used independently to monitor the status of Bluetooth communication integrity in wireless versions. Refer to the wiring diagrams in Appendix B for various ways to configure this circuit.

Pins 5-6: A dry relay contact for monitoring the PC power supply status. This can be used to monitor the PC from the PMAC and initiate a complete system shutdown via pins 9-10 of J13 when a power-down is desired.

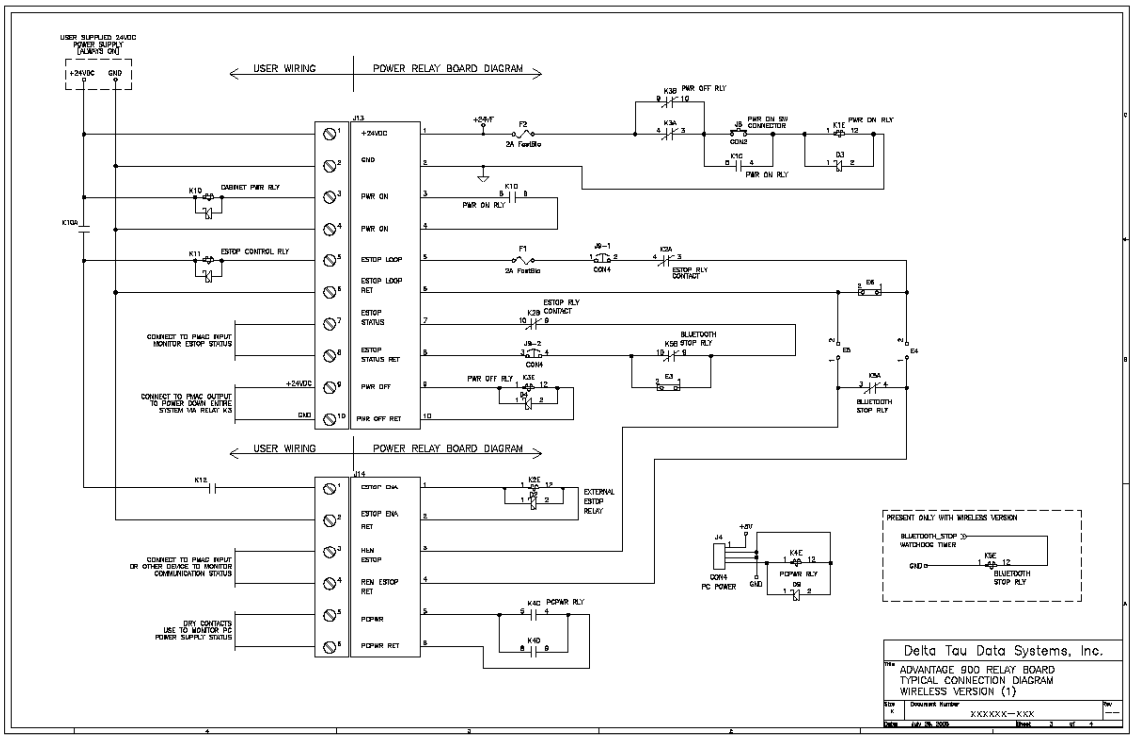
Field-Wiring Connections

There are two different relay boards, depending on which Pendant is being connected. For the wired Pendant, configure the jumpers in the appropriate manner and follow the diagram below.

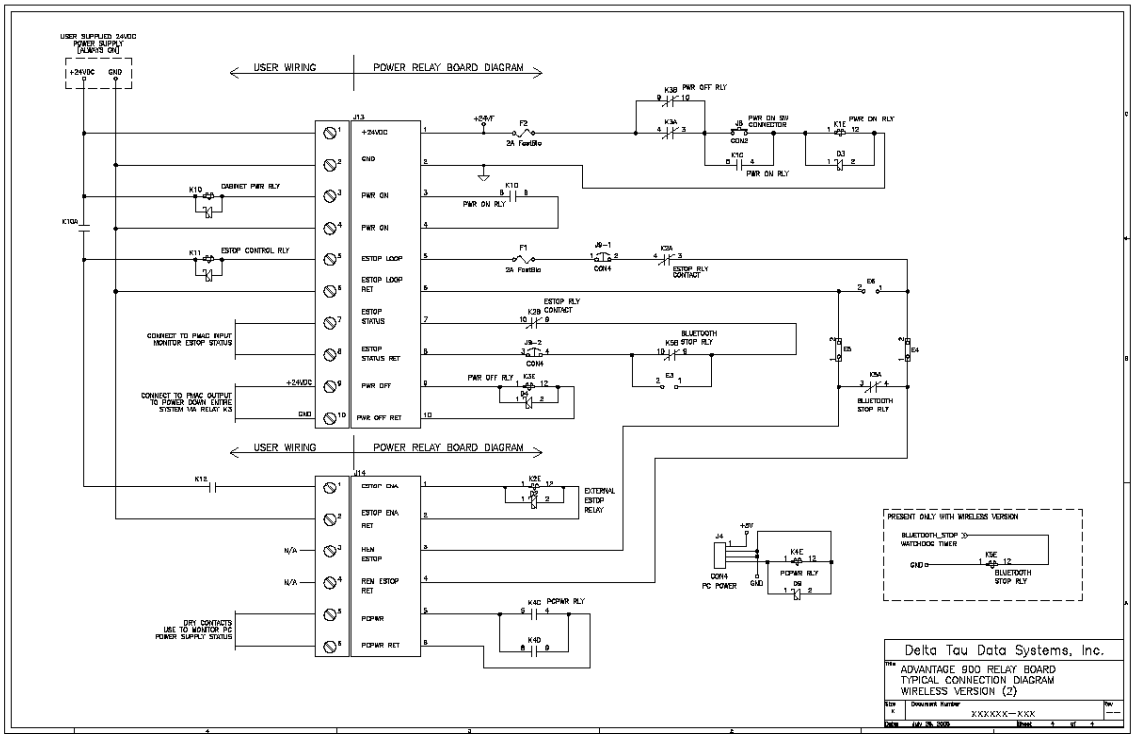


Wired diagram

For the wireless Pendant, there are two configurations. In Wireless version 1, a loss of Bluetooth communication does not cause ESTOP; in Wireless version 2, Bluetooth loss does cause ESTOP. Both diagrams follow. In either case, the wireless relay board needs to be connected to the serial port via the included cable.



Wireless version 1



Wireless Version 2

SOFTWARE SETUP

The Advantage 900 Remote Operator Pendant communicates to the PMAC/UMAC through the Pcommserver device driver which is automatically installed with any Delta Tau Pro2-based software (PMAC-NC Pro2 or PEWIN Pro2). The Pcommserver device driver is initialized when any Delta Tau Pro2 based software is started. During the initialization sequence the device driver will automatically detect when the Advantage 900 Remote Operator Pendant is present and begin transferring data to the PMAC/UMAC via Dual Ported Ram memory addresses.

The DPR memory addresses are automatically defined by the NC Setup utility for a given application and can be found in the file **Adv900.h.** If the Pendant is to be used in a custom application, the same memory locations can be used. The appropriate M-variable definitions are shown below for reference purposes and can be used for custom applications:

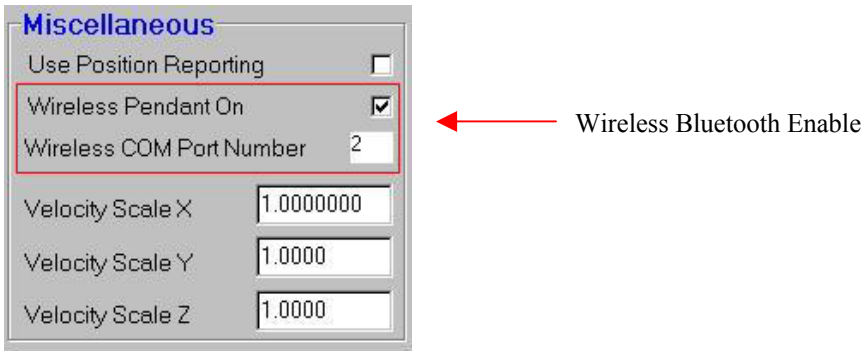
```
//Example Advantage 900 Remote Pendant Button M-Variable.
//Definitions and Example Macro Names.

#define KEY_DOWN_M           M800
#define KEY_CODE_M           M801
#define FEEDRATE_M           M802
#define RAPID_M              M803
#define AXISSEL_M            M804
#define SPINDLE_M            M805
#define JOGRATE_M            M806
#define HANDLE900_COUNT_M    M807

//Dual Port Ram Memory Map Locations.
//PcommServer Automatically writes to these locations.

M800->Y:$60FD2,0,8,U
M801->Y:$60FD2,8,8,U
M802->Y:$60FD3,0,16,U
M803->X:$60FD0,0,16,U
M804->Y:$60FD0,4,4,U
M805->Y:$60FD4,0,16,U
M806->Y:$60FD0,0,4,U
M807->X:$60FD1,0,16,U

//Example Advantage 900 Remote Pendant LED Output M-Variable.
//Definitions and Example Macro Names.

#define LT_AUTO_M            M2000
#define LT_MDI_M             M2001
#define LT_RESET_M           M2002
#define LT_SINGBLOCK_M       M2003
#define LT_BLOCKDELETE_M     M2004
#define LT_OPTSTOP_M         M2005
#define LT_CONT_M            M2006
#define LT_HANDINC_M         M2007
#define LT_HOME_M            M2008
#define LT_USER1_M           M2009
#define LT_USER2_M           M2010
#define LT_USER3_M           M2011
#define LT_USER4_M           M2012
#define LT_USER5_M           M2013
#define LT_USER6_M           M2014
#define LT_CYCLE_START_M     M2015
```

```
#define LT_FEED_HOLD_M        M2016
#define E_STOP_IN_M           M2017

//Dual Port Ram Memory Map Locations.
//PcommServer Automatically writes to these locations.

M2000->Y:$60FD8,0,1
M2001->Y:$60FD8,1,1
M2002->Y:$60FD8,2,1
M2003->Y:$60FD8,3,1
M2004->Y:$60FD8,4,1
M2005->Y:$60FD8,5,1
M2006->Y:$60FD8,6,1
M2007->Y:$60FD8,7,1
M2008->Y:$60FD8,8,1
M2009->Y:$60FD8,9,1
M2010->Y:$60FD8,10,1
M2011->Y:$60FD8,11,1
M2012->Y:$60FD8,12,1
M2013->Y:$60FD8,13,1
M2014->Y:$60FD8,14,1
M2015->X:$60FD8,0,1
M2016->X:$60FD8,1,1
M2017->Y:$60FD0,8,1
```

WIRELESS SOFTWARE SETUP

When the Bluetooth option is present, the user must set the switch to enable file transfer through this method.

This is done through either the NC Setup application or directly through the Windows Registry. When using the NC Setup application, enable the "Wireless Pendant On" checkbox and enter the COM port to which the relay board is actually connected.



The actual Windows registry key can be found in the following location and only needs to be set to the COM port connected to:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\PMAC\Device0\Nc0\SYSTEM\WirelesCOMPort

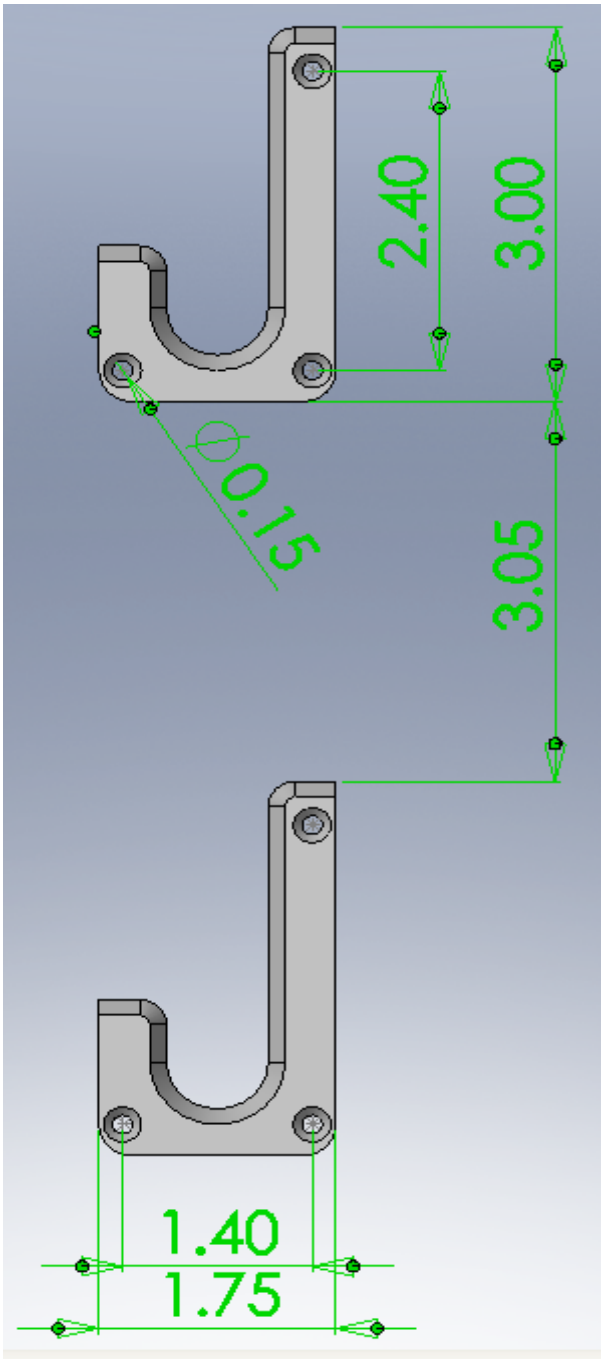
MOUNTING AND INSTALLATION

When the Advantage 900 Remote Operator Pendant is supplied with any Advantage 900 System that includes an Advantage 900 Console, no separate mounting of the handheld unit is required.

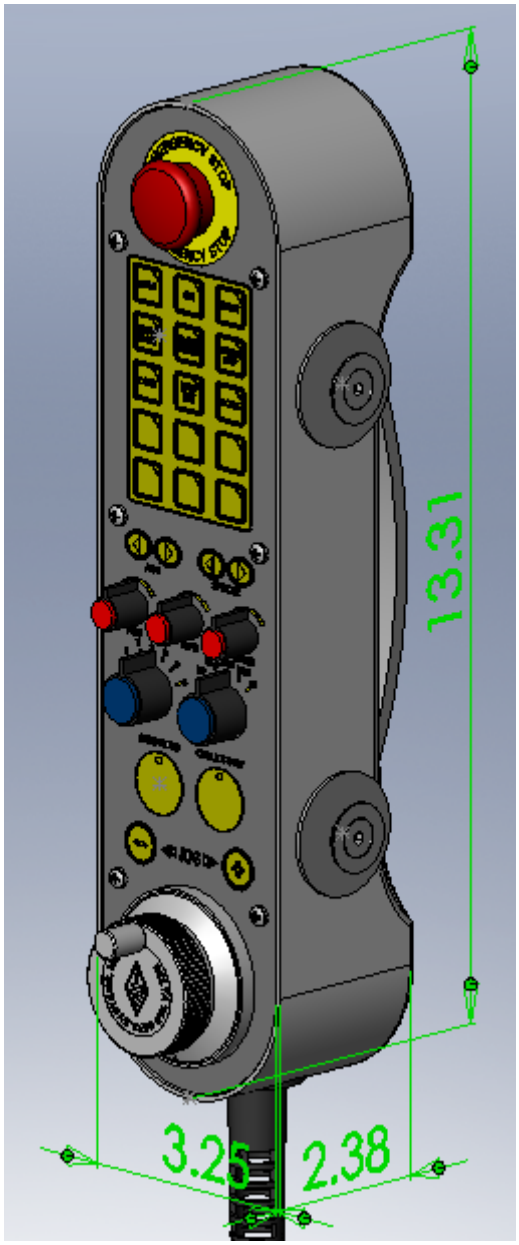
If the unit is purchased as a stand-alone accessory, it will be necessary to mount both the Remote Operator Pendant and the associated Relay Board. The handheld unit is supplied with a dual-dovetail sliding mechanism and hardware to facilitate easy on/off removal and replacement.

See the following mechanical drawings included for dimensions and screw locations.

Mechanical Drawing

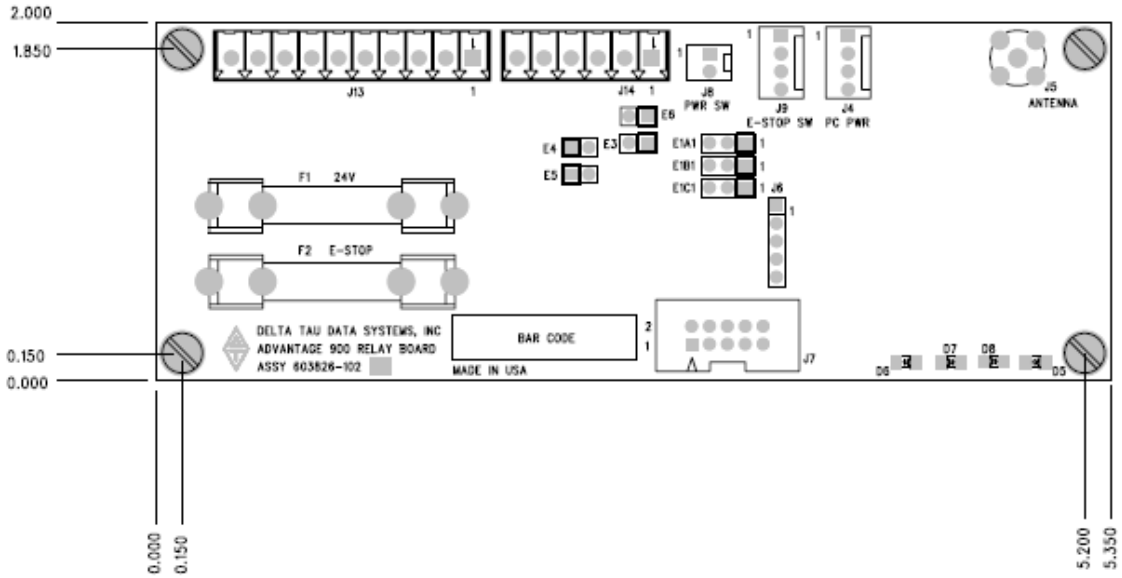


Mounting Brackets



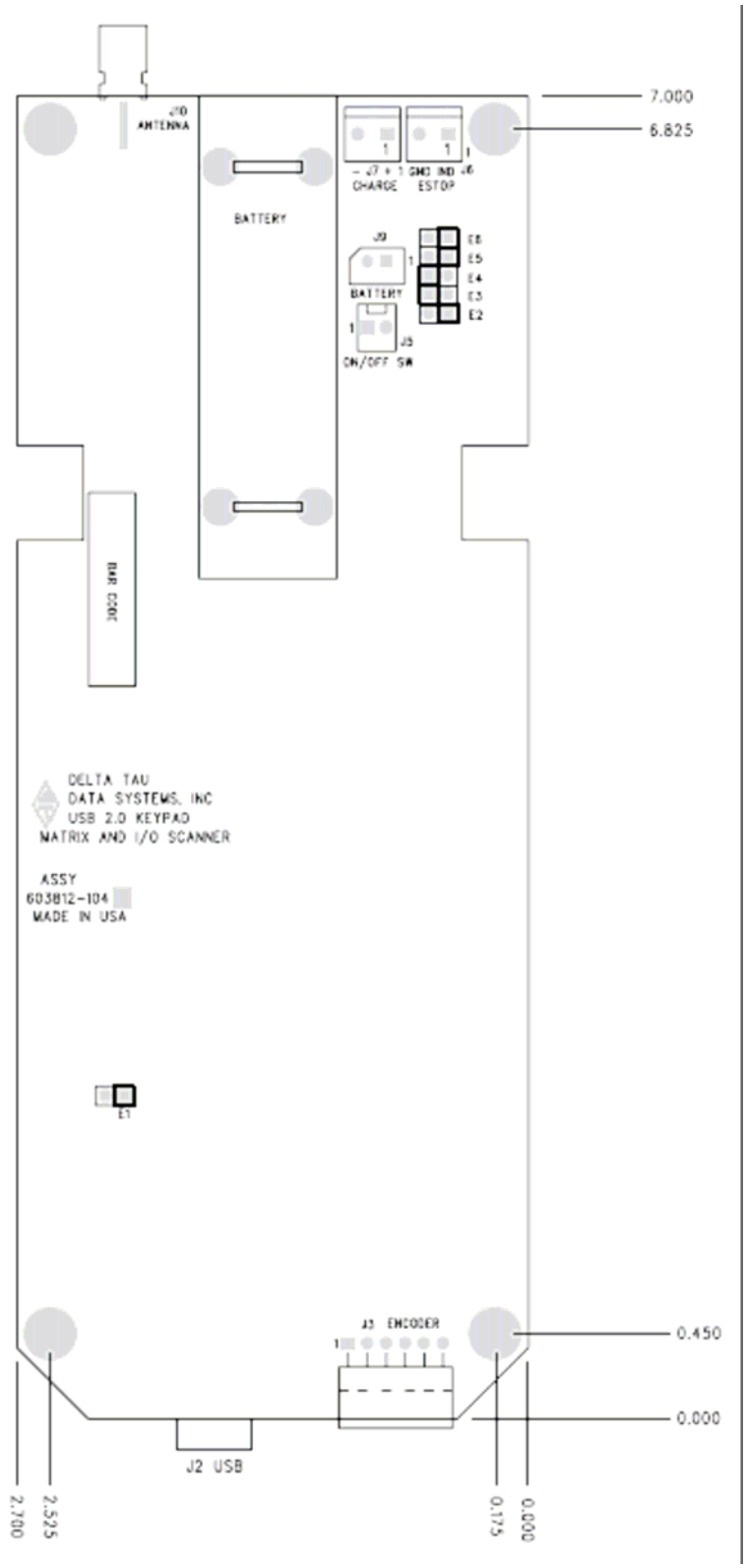
Pendant

Advantage 900 Relay Board Mechanical Layout



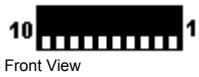
Relay Board

Advantage 900 Pendant Board Mechanical Layout



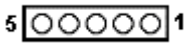
CONNECTOR DESCRIPTIONS – 900 REMOTE PENDANT

J1: KEYPAD INPUT CONNECTION

J1 KEYPAD INPUT CONNECTION (10-PIN SOCKET)	

PIN #	SYMBOL	FUNCTION	DESCRIPTION	NOTES
1	KBDY6	INPUT	ROW 6 OF KEYPAD MATRIX	
2	KBDY5	INPUT	ROW 5 OF KEYPAD MATRIX	
3	KBDY4	INPUT	ROW 4 OF KEYPAD MATRIX	
4	KBDX4	INPUT	COLUMN 4 OF KEYPAD MATRIX	
5	KBDY3	INPUT	ROW 3 OF KEYPAD MATRIX	
6	KBDX3	INPUT	COLUMN 3 OF KEYPAD MATRIX	
7	KBDY2	INPUT	ROW 2 OF KEYPAD MATRIX	
8	KBDX2	INPUT	COLUMN 2 OF KEYPAD MATRIX	
9	KBDY1	INPUT	ROW 1 OF KEYPAD MATRIX	
10	KBDX1	INPUT	COLUMN 1 OF KEYPAD MATRIX	

J2: USB CONNECTION

J2 USB CONNECTION (5-PIN HEADER)	

PIN #	SYMBOL	FUNCTION	DESCRIPTION	NOTES
1	+5V	INPUT	+5V POWER	
2	USBDM	INPUT	DATA MINUS	
3	USBDP	INPUT	DATA PLUS	
4	GND	COMMON	DIGITAL COMMON	
5	CHGND	COMMON	CHASIS COMMON	

J3: HANDWHEEL CONNECTION

J3 HANDWHEEL CONNECTION (6-PIN HEADER)	Front View

PIN #	SYMBOL	FUNCTION	DESCRIPTION	NOTES
1	HWCHA+	INPUT	HANDWHEEL CHA+	
2	HWCHA-	INPUT	HANDWHEEL CHA-	
3	HWCHB+	INPUT	HANDWHEEL CHB+	
4	HWCHB-	INPUT	HANDWHEEL CHB-	
5	+5V	INPUT	+5V POWER	
6	GND	COMMON	DIGITAL COMMON	

J4: KEYPAD LED CONNECTION

J4 KEYPAD LED CONNECTION (32-PIN SOCKET)	Front View

PIN #	SYMBOL	FUNCTION	DESCRIPTION	NOTES
1		NOT USED		
2		NOT USED		
3	LED27	INPUT		
4	+3P3V_USB	INPUT		
5	LED26	INPUT		
6	LED25	INPUT		
7	LED24	INPUT		
8	LED23	INPUT		
9	LED22	INPUT		
10	LED21	INPUT		
11	LED20	INPUT		
12	LED19	INPUT		
13	LED18	INPUT		
14	LED17	INPUT		
15	LED16	INPUT		
16	+3P3V_USB	INPUT		
17	LED15	INPUT		
18	LED14	INPUT		
19	LED13	INPUT		
20	LED12	INPUT		
21	LED11	INPUT		
22	LED10	INPUT		
23	LED9	INPUT		
24	LED8	INPUT		
25	LED7	INPUT		
26	LED6	INPUT		
27	LED5	INPUT		
28	LED4	INPUT		
29	LED3	INPUT		
30	LED2	INPUT		
31	LED1	INPUT		
32	+3P3V_USB	INPUT		

J5: ON/OFF SWITCH CONNECTION

J5 ON/OFF SWITCH CONNECTION (2-PIN HEADER)	Front View

PIN #	SYMBOL	FUNCTION	DESCRIPTION	NOTES
1	ON	INPUT	ON/OFF SWITCH	CONNECTS TO NC STOP BUTTON
2	OFF	INPUT	ON/OFF SWITCH	CONNECTS TO NC STOP BUTTON

This connector is only used in the wireless version to prevent the battery from draining when the Pendant is not in use.

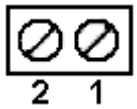
J6: ESTOP INDICATION CONNECTION

J6 ESTOP INDICATION CONNECTION (2-PIN HEADER)	Front View

PIN #	SYMBOL	FUNCTION	DESCRIPTION	NOTES
1	IND	INPUT		CONNECTS TO NC ESTOP BUTTON
2	GND	COMMON		CONNECTS TO NC ESTOP BUTTON

This connector is only used in the wired version to sense if the ESTOP button has been depressed.

J7: BATTERY CHARGE CONNECTION

J7 ON/OFF SWITCH CONNECTION (2-PIN TERMINAL BLOCK)	 Front View

PIN #	SYMBOL	FUNCTION	DESCRIPTION	NOTES
1	+	+5V	POWER FROM CHARGING CABLE	CONNECT THROUGH NC ESTOP BUTTON
2	-	COMMON		CONNECT TO COMMON FROM CHARGING CABLE

This connector is only used in the wireless version to charge the battery.

J8: RS-232 CONNECTION

J8 RS-232 CONNECTION (4-PIN HEADER)	Front View

PIN #	SYMBOL	FUNCTION	DESCRIPTION	NOTES
1	+5V	INPUT	+5V POWER	
2	R2IN	INPUT	RECEIVE DATA	
3	T1OUT	OUTPUT	TRANSMIT DATA	
4	GND	COMMON	DIGITAL COMMON	

J9: BATTERY CONNECTION

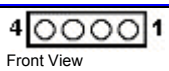
J9 BATTERY CONNECTION (2-PIN HEADER)	Front View

PIN #	SYMBOL	FUNCTION	DESCRIPTION	NOTES
1	VBATT	+3P3V		
2	GND	COMMON		

This connector is only used in the wireless version to connect the battery.

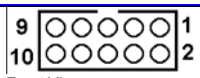
CONNECTOR DESCRIPTIONS – 900 RELAY BOARD

J4: PC POWER CONNECTION

J4 PC POWER CONNECTION (4-PIN HEADER)	 Front View

PIN #	SYMBOL	FUNCTION	DESCRIPTION	NOTES
1	+5V	INPUT	+5V POWER	
2	GND	COMMON	DIGITAL COMMON	
3	GND	COMMON	DIGITAL COMMON	
4	+12v	INPUT	+12V POWER	

J7: RS-232 CONNECTION

J7 RS-232 CONNECTION (4-PIN HEADER)	 Front View

PIN #	SYMBOL	FUNCTION	DESCRIPTION	NOTES
1	NC	NC	NOT CONNECTED	
2	NC	NC	NOT CONNECTED	
3	PC_RXD	OUTPUT	RECEIVE DATA	
4	PC_RTS	INPUT	TRANSMIT DATA	
5	PC_TXD	INPUT	TRANSMIT DATA	
6	PC_CTS	OUTPUT	RECEIVE DATA	
7	NC	NC	NOT CONNECTED	
8	NC	NC	NOT CONNECTED	
9	GND	COMMON	DIGITAL GROUND	
10	NC	NC	NOT CONNECTED	

J8: POWER ON PUSHBUTTON CONNECTION

J8 POWER SWITCH CONNECTION (2-PIN HEADER)	Front View

PIN #	SYMBOL	FUNCTION	DESCRIPTION	NOTES
1		INPUT	PC ON/OFF SWITCH	CONNECTS TO PC ON/OFF BUTTON
2		INPUT	PC ON/OFF SWITCH	CONNECTS TO PC ON/OFF BUTTON

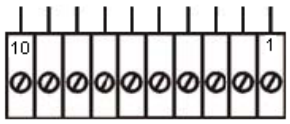
Use normally open pushbutton.

J9: E-STOP SWITCH CONNECTION

J9 E-STOP SWITCH CONNECTION (4-PIN HEADER)	Front View

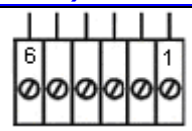
PIN #	SYMBOL	FUNCTION	DESCRIPTION	NOTES
1		INPUT	ESTOP LOOP 1-2	See Connection Diagrams
2		INPUT	ESTOP LOOP 1-2	See Connection Diagrams
3		INPUT	ESTOP LOOP 3-4	See Connection Diagrams
4		INPUT	ESTOP LOOP 3-4	See Connection Diagrams

J13: (10-PIN TERMINAL BLOCK)

J13 (10-PIN TERMINAL BLOCK)	 Front View

PIN #	SYMBOL	FUNCTION	DESCRIPTION	NOTES
1	+24VDC	INPUT	USER SUPPLIED +24VDC ALWAYS ON POWER.	FOR LATCHING POWER-ON CIRCUIT.
2	GND	COMMON	+24V GROUND	FOR LATCHING POWER-ON CIRCUIT.
3	PWR ON	OUTPUT	USED TO PWR ON EXTERNAL DEVICES	e.g. CABINET PWR RLY
4	PWR ON RET	COMMON	+24V GROUND	
5	ESTOP LOOP	INPUT	WIRE TO ESTOP CNTRL RLY	
6	ESTOP LOOP RET	COMMON	+24V GROUND	
7	ESTOP STATUS	OUTPUT	MONITOR ESTOP STATUS	WIRE TO PMAC INPUT
8	ESTOP STATUS RET	COMMON	DIGITAL GND	
9	PWR OFF	INPUT	+24V	CONNECT TO PMAC OUTPUT
10	PWR OFF RET	COMMON	+24V GROUND	

J14: (6-PIN TERMINAL BLOCK)

J13 (6-PIN TERMINAL BLOCK)	 Front View

PIN #	SYMBOL	FUNCTION	DESCRIPTION	NOTES
1	ESTOP ENA	INPUT	+24V	
2	ESTOP ENA RET	COMMON	+24V GROUND	
3	REM ESTOP	INPUT	CABLED PENDANT AND ADDITIONAL ESTOP HERE	
4	REM ESTOP RET	COMMON	GROUND	
5	PCPWR	INPUT	DRY CONTACT TO MONITOR PC PWR SUPLY STATUS	
6	PCPWR RET	COMMON	GROUND	

APPENDIX A - BLUETOOTH COMMANDER – PROGRAMMING WIRELESS UNITS

Bluetooth-enabled Remote Operator Pendants and associated relay boards are programmed at the factory to operate as a unique pair. A particular handheld unit will communicate to a particular relay board only if it has been programmed to do so in advance.

In some rare instances, it is necessary to field program these devices. The following instructions describe how to do so.

Please note that a special cable is necessary to program the unit. This cable is available through Delta Tau or can be sourced from a third-party vendor. This cable connects to J2 (USB2.0) on the Remote Handheld unit.

Bluetooth Re-Programming Procedure

Step 1

Be sure the Advantage 900 Relay Board is connected to the PC via an unused serial port. Make note of the port number.

Step 2

Launch the ***Simply Blue Commander*** utility which is included with all Advantage 900 systems. The application will be located in the following folder:

C:\Documents and Settings\Advantage 900 User\My Documents\Adv900 Comm Software\Util

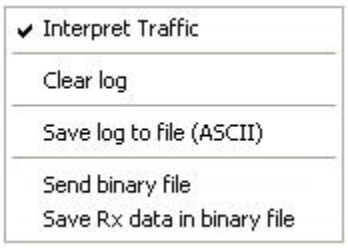
If you do not have this application, contact Delta Tau technical support to have it emailed to you.

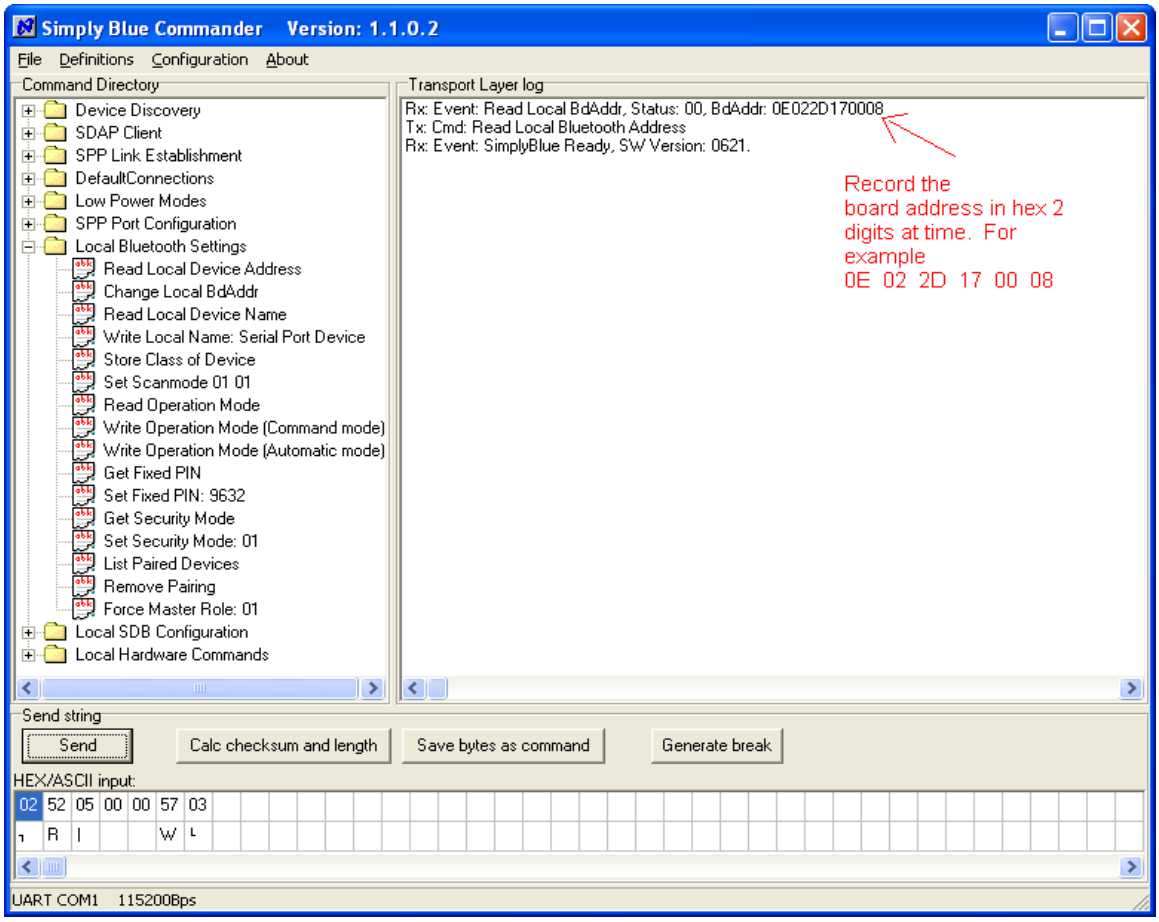
Step 3

Select the Local Bluetooth Settings Folder and expand it by double-clicking (see the screenshot on the following page).

Step 4

Double-click the Read Local Device Address and record the value as shown in the screenshot on the following page. Confirm that the ***Simply Blue Commander*** is in "Interpret Mode" by right-clicking in the Transport Layer Log screen and verifying that Interpret Traffic mode has been checkmarked as shown below.

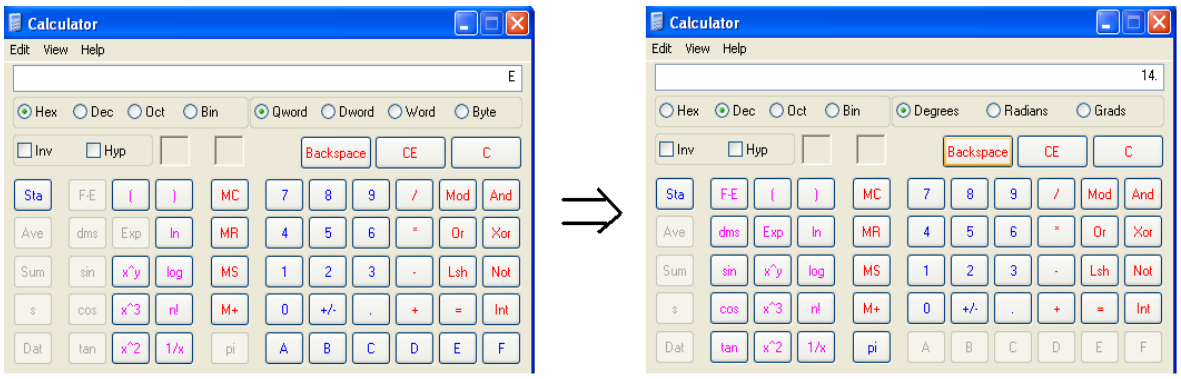



Simply Blue Commander Version: 1.1.0.2
File Definitions Configuration About
Command Directory
Device Discovery
SDAP Client
SPP Link Establishment
DefaultConnections
Low Power Modes
SPP Port Configuration
Local Bluetooth Settings
Read Local Device Address
Change Local BdAddr
Read Local Device Name
Write Local Name: Serial Port Device
Store Class of Device
Set Scanmode 01 01
Read Operation Mode
Write Operation Mode (Command mode)
Write Operation Mode (Automatic mode)
Get Fixed PIN
Set Fixed PIN: 9632
Get Security Mode
Set Security Mode: 01
List Paired Devices
Remove Pairing
Force Master Role: 01
Local SDB Configuration
Local Hardware Commands
Transport Layer log
Rx: Event: Read Local BdAddr, Status: 00, BdAddr: 0E022D170008
Tx: Cmd: Read Local Bluetooth Address
Rx: Event: SimplyBlue Ready, SW Version: 0621.
Record the board address in hex 2 digits at time. For example 0E 02 2D 17 00 08
Send string
Send
Calc checksum and length
Save bytes as command
Generate break
HEX/ASCII input:
02 52 05 00 00 57 03
UART COM1 115200Bps

Step 5

Convert the values from hexadecimal to decimal using a scientific calculator such as that included with Microsoft Windows (see screenshots below). Record these values for future use.

Example: 0E 02 2D 17 00 08 Converts to: 14 2 45 23 0 8



Step 6

Connect the Advantage 900 Remote Handheld unit to the PC using the special USB2.0 cable (J2 on the Advantage 900 Pendant Board). You must open the remote handheld unit by removing the six faceplate attaching screws to do this.

At this time, a "Welcome to the Found New Hardware Wizard" dialog box should appear if the unit has not been plugged in to a USB port previously. Follow the on-screen instructions and pay attention to the following:

1) Do not allow Windows to connect to *Windows Update*.
2) Allow *Windows to Install the Software Automatically*.
3) Choose *Continue Anyway* when prompted about Windows Logo Testing.

Step 7

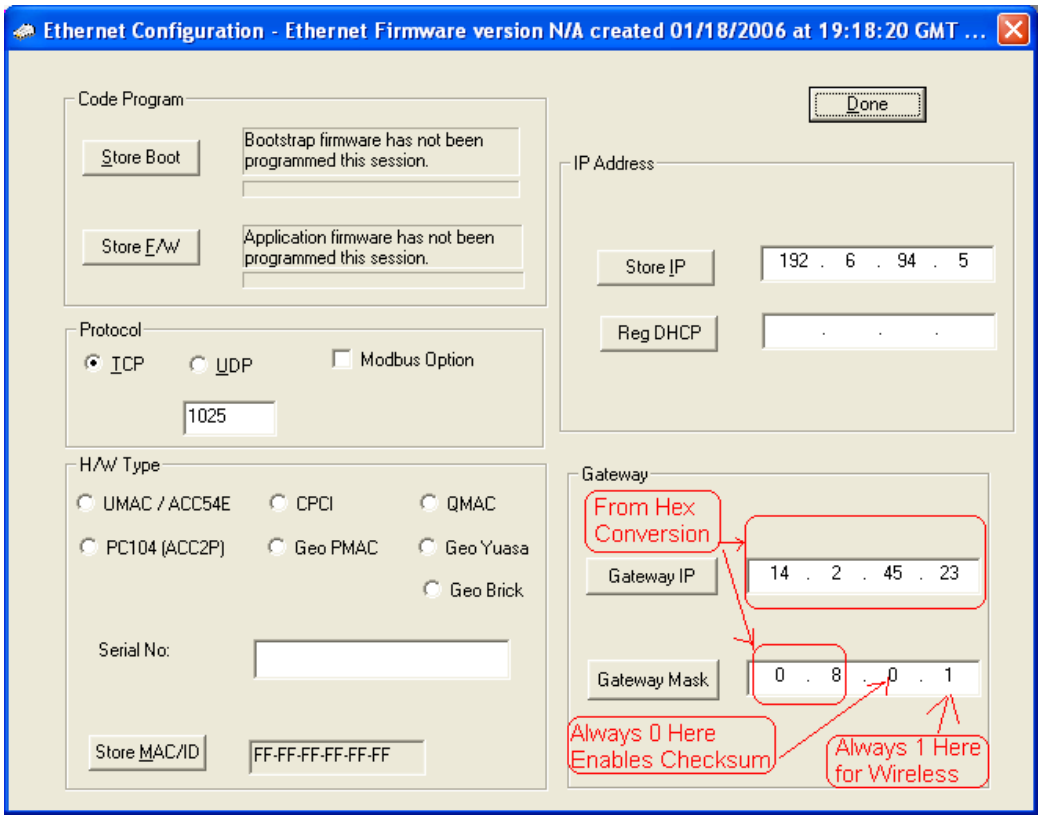
At this time you may close the ***Simply Blue Commander*** application and open the Delta Tau ***Configure Ethernet 100Base T*** application located in the Windows Start Menu as follows:

Start -> All Programs -> PMAC Executive Pro2 Suite -> Delta Tau Common

Step 8

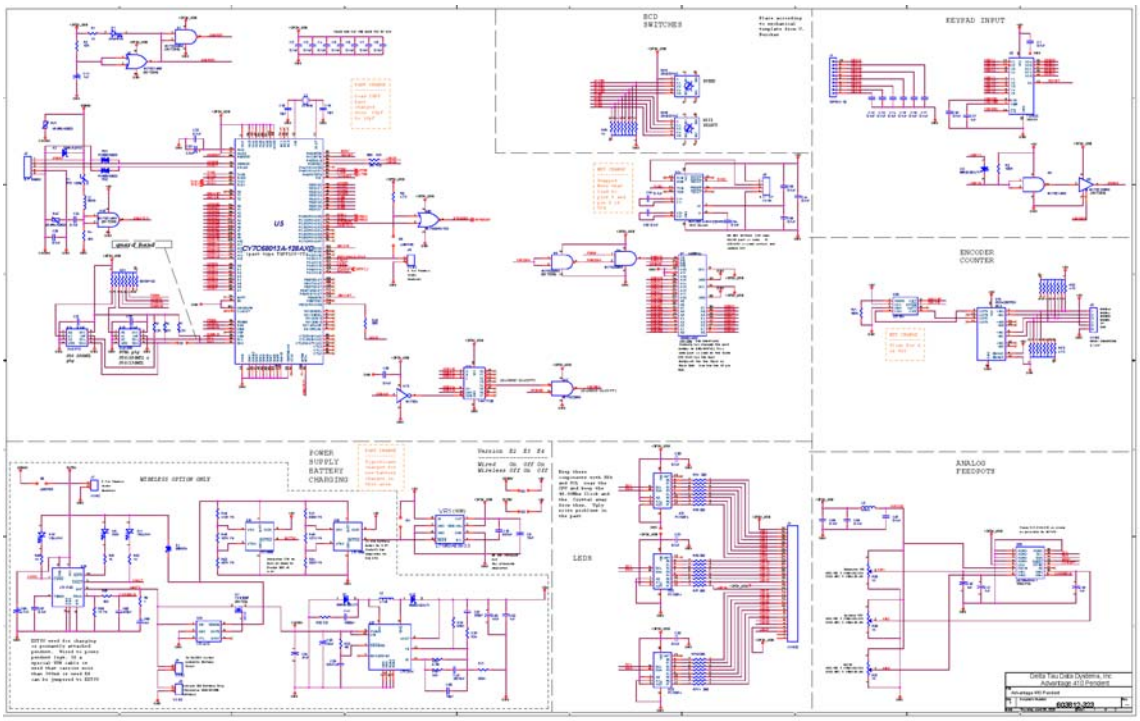
Enter the *Gateway IP* by using the first 4 converted hexadecimal values as shown below. Enter the *Gateway Mask* by using the last 2 converted hexadecimal values. Set the third address to 0 and the last to 1 as shown below.

Click on the *Gateway IP* and *Gateway Mask* buttons to complete the programming.



APPENDIX B - SELECTED SCHEMATICS

PENDANT SCHEMATIC



RELAY SCHEMATIC
INSERT 900_RelayBoard_Schematic_2.pdf HERE

APPENDIX C – CONNECTOR PART NUMBERS

Molex - ????